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CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 :2005

T-2377

Job No : CTCE/BBMP/KRIDL/W.No.03/CSR-09/143k/CEMENT/2016-17 Date: 15.09.2016

TEST REPORT ON CEMENT

* CUSTOMER	:	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
*AGENCY	:	**Technical Manager (West),** KRIDL, Bangalore.
*NAME OF THE WORK	:	Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.
REFERENCE	:	BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016
SAMPLE ID	:	Cement
SAMPLE RECEIVED ON	:	14.09.2016
PERIOD OF TESTING	:	14.09.2016 to 15.09.2016

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988(RA-2009)	28.50 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988(RA-2009)	145 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988(RA-2009)	480 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988(RA-2009)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

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⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

****

Vidya

VIDYARANI P.K.
Technical Manager

AEW3 15/9

AE-03

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Job No.: CTCE/BBMP/KRIDL/W No.03/CSR-09/143k/SAND-Gradation/2016-17 : 15.09.2016

TEST REPORT ON DETERMINATION GRADATION OF FINE AGGREGATES

* Customer	: **Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
* Agency	: **Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	: Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.
Reference	: BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016
Technical Reference	: IS : 2386 Part 1 - 1963 RA-2007
Sample ID	: Fine Aggregates
Sample Received on	: 14.09.2016
Date of Testing	: 15.09.2016

Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	93.80	90-100	90-100	90-100	95-100
2.36	72.60	60-95	75-100	85-100	95-100
1.18	50.10	30-70	55-90	75-100	90-100
600 Micron	25.60	15-34	35-59	60-79	80-100
300 Micron	9.30	5-20	8-30	12-40	15-50
150 Micron	3.50	0-10	0-10	0-10	0-15

*Information is furnished by the Customer/Representative.

Remarks : This sample is under Zone-I specific limits.

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AE W2 BBMP

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AE-02

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Job No.: CTCE/BBMP/KRIDL/W.No.03/CSR-09/143k/AGG/GR/2016-17 : 15.09.2016

TEST REPORT ON DETERMINATION GRADATION OF COARSE AGGREGATES

* Customer	: **Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
* Agency	: **Technical Manager (West),** KRIDL, Bangalore.
* Name of Work	: Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.
Reference	: BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016
Technical Reference	: IS : 2386 Part 1 -1963 RA-2007
Sample ID	: Coarse Aggregates (40mm)
Sample Received on	: 14.09.2016
Date of Testing	: 15.09.2016

Total Wt. of Aggregates in gms= **5000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Specific Limits as per IS 383-1970 (RA- 2007)	
		Graded	Single Sized
80	100	100	-
63	100	-	100
40	97.70	95-100	85-100
20	38.70	30-70	0-20
10	15.80	10-35	0-5
4.75	2.80	0-5	-

* Information is furnished by the Customer/Representative

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Remarks : This sample is under Graded specific limits.

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ISO 9001 REGISTERED

Job No.: CTCE/BBMP/KRIDL/W.No.03/STEEL/2016-17 17.09.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
Name of the work	:	Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.
Reference	:	BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016
Date of Test	:	17.09.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm²	Tensile strength (Ultimate stress) N/mm²	Elongation percent gauge length		
1	10	0.62	513	556	13.20	O.K	O.K

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JAS-ANZ BSCIC ISO 9001 REGISTERED

Job No. CTCE/BBMP/KRIDL/W No.03/STEEL/2016-17 17.09.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
Name of the work	:	Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.
Reference	:	BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016
Date of Test	:	17.09.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm²	Tensile strength (Ultimate stress) N/mm²	Elongation percent gauge length		
1	12	0.89	515	558	13.55	O.K	O.K

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Job No.: CTCE/BBMP/KRIDL/W.No.03/CSR-09/143k/CUBE/2016-17 17.10.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

*Customer	: **Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
*Agency	: **Technical Manager (West),** KRIDL, Bangalore.
*Name of the work	: Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.
Reference	: BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016
*Sample ID	: Cement Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
*Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day
Sample Received on	: 17.10.2016

Sl.No.	*Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	19.09.2016	17.10.2016	8.263	494.2	21.96
2	19.09.2016	17.10.2016	8.357	505.7	22.48
3	19.09.2016	17.10.2016	8.452	518.3	23.04

*Information is furnished by the Customer/Representative.

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Job No.: CTCE/BBMP/KRIDL/W.No.03/CSR-09/143k/CUBE/2016-17 17.10.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

*Customer : **Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.

*Agency : **Technical Manager (West),** KRIDL, Bangalore.

*Name of the work : Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.

Reference : BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016

*Sample ID : Cement Concrete

Size of cubes : 150mmx150mmx150mm

Cross Sectional Area : 22500 mm^2

Technical Reference : IS: 516-1959 (Reaffirmed 2008)

*Grade of Concrete : M_{30}

Compressive Strength as on : 28th day

Sample Received on : 17.10.2016

Sl.No.	*Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	19.09.2016	17.10.2016	8.263	516.9	22.97
2	19.09.2016	17.10.2016	8.148	503.6	22.38
3	19.09.2016	17.10.2016	8.326	528.2	23.48

*Information is furnished by the Customer/Representative.

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Job No.: CTCE/BBMP/KRIDL/W.No.03/CSR-09/143k/CUBE/2016-17 24.10.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

*Customer	: **Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
*Agency	: **Technical Manager (West),** KRIDL, Bangalore.
*Name of the work	: Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.
Reference	: BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016
*Sample ID	: Cement Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
*Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day
Sample Received on	: 24.10.2016

Sl.No.	*Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	26.09.2016	24.10.2016	8.367	497.2	22.10
2	26.09.2016	24.10.2016	8.452	511.7	22.74
3	26.09.2016	24.10.2016	8.261	486.5	21.62

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T-2377

Job No.: CTCE/BBMP/KRIDL/W.No.03/CSR-09/143k/CUBE/2016-17 24.10.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF CONCRETE CUBES

*Customer	: **Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
*Agency	: **Technical Manager (West),** KRIDL, Bangalore.
*Name of the work	: Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.
Reference	: BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016
*Sample ID	: Cement Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
*Grade of Concrete	: M_{20}
Compressive Strength as on	: 28th day
Sample Received on	: 24.10.2016

Sl.No	*Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	26.09.2016	24.10.2016	8.297	505.2	22.45
2	26.09.2016	24.10.2016	8.362	514.8	22.88
3	26.09.2016	24.10.2016	8.458	528.3	23.48

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JAS-ANZ
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Job No: CTCE/BBMP/KRIDL/W.No.03/WBM-II/2016-17 Date: 05.10.2016

REPORT

Customer	:	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	:	Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.
Reference	:	BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016
Type of Mix	:	Water Bound Macadam (Grade-II Metal)
Date of Sampling	:	03.10.2016
Date of Testing	:	05.10.2016

1) SIEVE ANALYSIS :

IS Sieve designation Size, mm	Percentage Passing for Graded Aggregate of Nominal size	Percentage by Weight Passing as per MORTH table 400-7
90mm	100.00	100.00
63mm	96.60	90-100
53mm	31.35	25-75
45mm	10.40	0-15
22.4mm	3.85	0-5

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Job No.: CTCE/BBMP/KRIDL/W.No.03/WBM/AIV/2016-17 05.10.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.
Reference	BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016
Source / Location	WBM Mix Plant, Bangalore
Type of Mix	Water Bound Macadam
Date of Testing	05.10.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	387	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	85	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	302	294	
4	Aggregate Impact value = percent fines	21.96	23.24	
	$100^* (W_2/W_1)$%			22.60

Comments:

→ Maximum allowable Aggregate Impact value for Water Bound Macadam is 30%

Note:

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Job No.: CTCE/BBMP/KRIDL/W.No.03/WBM-II/S-T/2016-17

05.10.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of Work	Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.
Reference	BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Water Bound Macadam (Grade-II Metal)
Date of Testing	05.10.2016

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Result : Flakiness Index = **11.84%**

Elongation Index = **13.69%**

Result : Combined Flakiness & Elongation index **25.53%**

Comments:

Maximum allowable Falakiness & Elongation Index for Water Bound Macadam is 30%

Note:

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Job No.: CTCE/BBMP/KRIDL/W.No.03/WBM-III/2016-17 Date: 07.10.2016

REPORT

Customer	:	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
Agency	:	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	:	Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.
Reference	:	BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016
Type of Mix	:	Water Bound Macadam (Grade-III Metal)
Date of Sampling	:	05.10.2016
Date of Testing	:	07.10.2016

1) SEIVE ANALYSIS:

IS Sieve designation Size,mm	Percentage Passing for Graded Aggregate of Nominal size	Percentage by Weight Passing as per MORTH table 400-7
63mm	100.00	100.00
53mm	96.55	95-100
45mm	70.20	65-90
22.4mm	6.85	0-10
11.2mm	2.40	0-5

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Job No.: CTCE/BBMP/KRIDL/W.No.03/WBM/AIV/2016-17 07.10.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.
Reference	BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016
Source / Location	WBM Mix Plant, Bangalore
Type of Mix	Water Bound Macadam
Date of Testing	07.10.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	86	82	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	299	301	
4	Aggregate Impact value = percent fines	22.34	21.41	
	$100^* (W_2/W_1)$%			21.87

Comments:

→ Maximum allowable Aggregate Impact value for Water Bound Macadam is 30%

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Note:

→ This test report should not be reproduced except in full, without written approval of the laboratory
→ The results indicated above are based on the tests carried out on the samples received in the laboratory
→ Any Query regarding the report must be reported within 30 days from the date of testing

AE-W3 10/7/16 AE-03

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CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory
An ISO 9001:2008 Certified Company
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Job No.: CTCE/BBMP/KRIDL/W.No.03/WBM-III/S-T/2016-17

07.10.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Yelahanka New Town Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of Work	Development and Improvements to roads and drains in Ward No.03 Attur area surroundings, BBMP, Bangalore.
Reference	BBMP/AEE/YNSD/86/2016-17 Dated: 14.09.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Water Bound Macadam (Grade-III Metal)
Date of Testing	07.10.2016

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **12.63%**

Elongation Index = **13.87%**

Result : Combined Flakiness & Elongation index 26.50%

Comments:

Maximum allowable Falakiness & Elongation Index for Water Bound Macadam is 30%

Note:

1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples collected by the laboratory.
3. Any Query regarding the report must be reported within 30 days from the date of testing.

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